

ABSTRACT

A proximity sensor for a transcranial magnetic stimulation (TMS) system detects the proximity of a TMS coil assembly to a position at which the coil is to receive pulses during TMS treatment and provides feedback to the operator so that the operator may adjust the TMS coil assembly as necessary to maintain optimal positioning during treatment. A flexible substrate containing a sensor or sensor array is disposed between the TMS coil assembly and the position such that the coupling of the TMS coil assembly to the position may be detected by the sensor(s). Sensor outputs are processed by signal processing circuitry to provide an indication of whether the TMS coil assembly is properly disposed with respect to the position during TMS treatment. A display may be used to provide an indication of how to adjust the TMS coil assembly to improve the positioning of the TMS coil assembly. On the other hand, a sound generator may be used to generate a sound that indicates to an operator whether the TMS coil assembly is properly positioned at the position. Many different types of sensor devices may be used to detect proximity, including membrane switches, variable resistance sensors, resistive strips, touch screens, pickup loops, fluid displacement sensors, optical sensors, acoustic sensors, inductive coupling sensors, capacitive coupling sensors, temperature sensors, and the like.